

THE ENGLISH ELECTRIC CO., LTD.

NELSON RESEARCH LABORATORIES

STAFFORD

MATHEMATICAL PHYSICS LABORATORY.

Telephone :—Stafford 700.

Report No. NS t 45

Date 4.8.55

Reference

Order No.

Front Sheet.

Data Sheet. 1.

Figure sheet S6/10129

DEUCE Subroutine No. 53 (D03)

Report by

S.J.M.Denison.

SUMMARY.

The attached document gives details of a DEUCE subroutine using the automatic divider for dividing one single-length number by another to give the true quotient and remainder, with a validity test but no shift.

The subroutine has been prepared, copied into all instruction delay lines and tested in each, at N.R.L. Blackheath.

S.J.M.DENISON.

MATHEMATICAL PHYSICS LABORATORY.

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NS t 45

Sheet No.: 1

Description. Division, using automatic divider, of single-length number by single-length number, to give true quotient and remainder. Correction included for exact division with negative divisor. Validity tests. No shift. First Order.

Data. a to be divided by b.

Result. Q, R, where $2^{31}a = Q \cdot b + R$, $0 \leq R < |b|$ and

R has same sign as b (unless R = 0), provided that Q is single-length, $|b| \neq 2^{30}$ and $b \neq 2^{30}$.

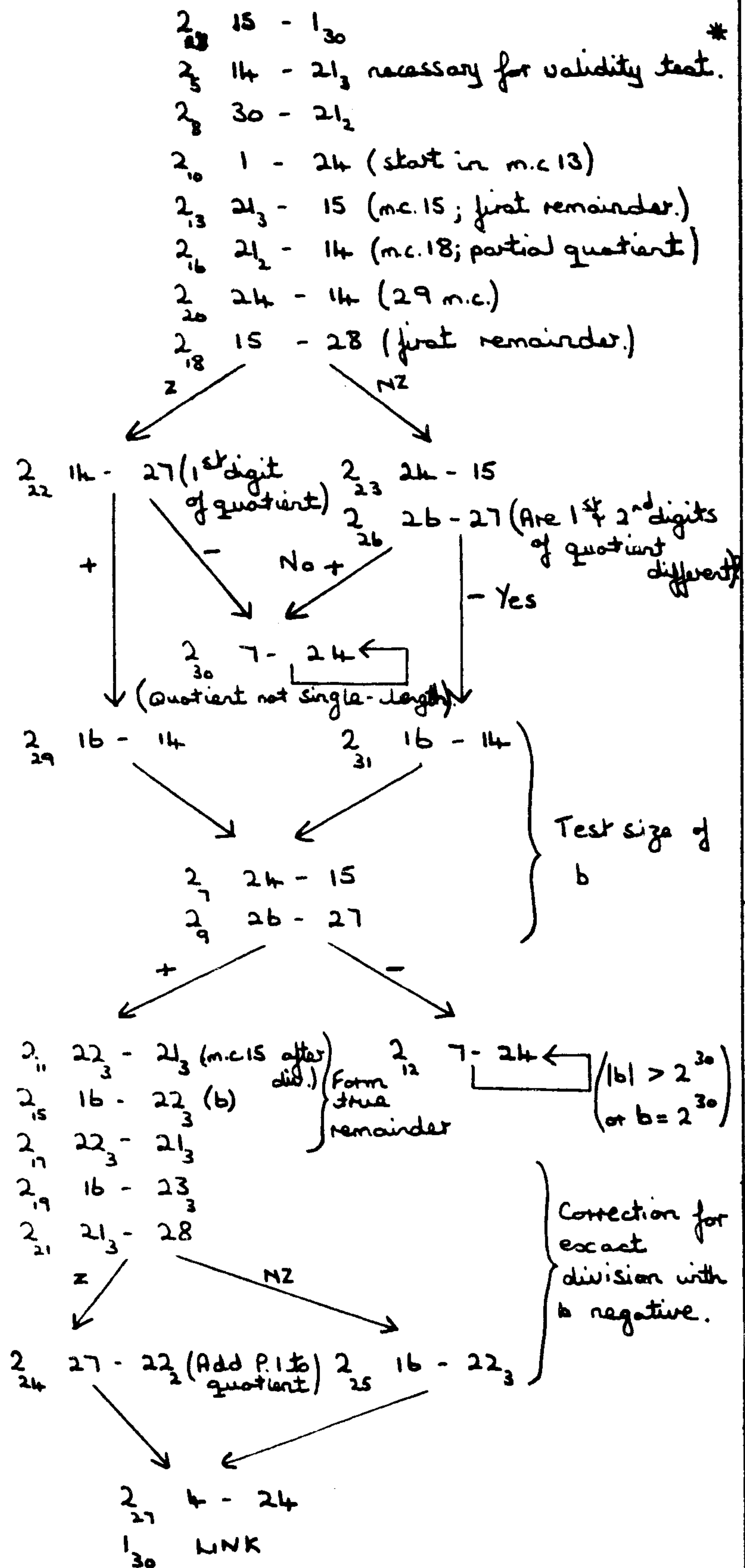
Failure indication (buzzer) if these conditions not satisfied.

Instructions for Use.

Stores used.	14	15	16	21_2	21_3
Contents at entry.	a	LINK	b	-	-
Contents at exit.	b	2b	b	Q	R
Occupies.	m.c.'s. 5, 7-13, 15-31.				
Entry.	m.c. 28				
Time.	3 m.s. 2 m.c.				

N.B. This subroutine cannot be worked through properly using single-shots with the machine stopped.

D.L. 2		Track					
Card No.							
mc	NB	S	D	C	W	T	
							Y
							X
							0
							1
0							2
1							3
2							4
3							5
4							6
5							7
6	2	14	21		0	1	8
7	2	24	15		0	0	9
8	2	30	21		0	0	Y
9	2	26	27		0	0	X
10	2	1	24		1	1	0
11	2	22	21		2	2	1
12	2	7	24		0	30	2
13	2	21	15		0	1	3
14							4
15	2	16	22		0	0	5
16	2	21	14		0	2	6
17	2	22	21		0	0	7
18	2	15	28		0	2	8
19	2	16	23		0	0	9
20	2	24	14	2	0	28	Y
21	2	21	28		0	1	X
22	2	14	27		0	5	0
23	2	24	15		0	1	1
24	2	27	22		0	1	2
25	2	16	22		0	0	3
26	2	26	27		0	2	4
27	1	14	24		0	1	5
28	2	15	1		0	7	6
29	2	16	14		0	8	7
30	2	7	24		0	30	8
31	2	16	14		0	6	9



* See note in Do1 (No.34)

FLOW DIAGRAM AND CODING FOR SUBROUTINE No 53 (Do3). Single-length by single-length division with true remainder

Date
File Ref. E.E.